an ion-neutral decoupling device provided between the ion interface and the reaction/collision cell section, to provide substantial separation between ions and neutral particles.

As used in the specification including the claims, the term "reaction/collision cell section" is a cell operated of a suitable pressure to effect at least one of collision and reaction, as required.

In accordance with another aspect of the present invention, there is provided a method of operating a mass spectrometer system, in which ions are generated and processed, the method comprising:

(i) supplying a sample to an ion source and generating an ion source stream of ions, including sample ions and unwanted neutral particles;

(ii) separating neutral particles from an ion stream; and then

(iii) passing the ion stream into a reaction/collision cell section.

Please amend the three paragraphs from page 8, line 32 to page 9, line 22 as follows:

Reference will first be made to Figure 1, which shows a mass spectrometer indicated generally by the reference 10. The mass spectrometer 10 includes a sample introduction system 12, that can be any known and suitable sample introduction system. The sample introduction system 12 is connected to an ion source 14. Any suitable, known sample introduction system 12 and ion source 14 can be used. For example, these two elements 12, 14 can comprise an electro spray source, for generating ions from a sample analyte desolved in solution. A nebulizer / spray chamber / ICP is another example of an arrangement of the sample introduction system 12 and the ion source 14. However, any suitable sample introduction system and ion source can be used.

Figure 1 inherently assumes that the ion source 14 is at higher pressure than the ion optics compartment 18. An ion source stream or plasma from the ion

source 14 passes to a differential pumping interface 16. Commonly, for an atmospheric pressure source, this would be an intermediate pressure chamber operating at around 4 Torr.

From the pumping interface 16, the ion source stream passes into a compartment identified as an ion optics compartment 18. This will be maintained at a low pressure, typically 10^{-3} Torr. The wall 20 separating the ion optics compartment 18 from the differential pumping interface 16 can comprise a skimmer cone or the like. As described above, the pressure difference between the ion source 14 and differential pumping interface 16 creates a high velocity supersonic jet, indicated at 22, that enters the ion optics compartment 18. This supersonic jet would have the composition outlined above, i.e. typically sample particles, argon atoms largely neutral, and significant amounts of, for example, oxygen, hydrogen and their different polyatomic combinations, largely neutral.

Please amend the paragraph from page 9, line 31 to page 10, line 6, as follows:

A reaction cell or collision device on cell 30 is provided. This reaction in collision cell is operated to effect at least one of reaction and collision and fragmentation, as required. As detailed above, this operates at a different pressure range, typically either in a range of 10^{-3} Torr – 10^{-2} Torr with a reaction gas present, or the low pressure of 10^{-5} Torr when no reaction is to take place. It is shown having one end forming an interface with the ion optics compartment and the other end outside of the ion optics compartment 18. For some applications, the reaction or collision cell device 30 could be located wholly within the ion optics compartment 18, so that the ion stream is subjected to the pressure of the ion optics compartment 18 both before and after passing through the collision device 30 .

Please amend the paragraph on page 11, lines 14 – 21 as follows: